

## Peptic ulceration in men

### Epidemiology and medical care

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Clarke, M., Halil, T., and Salmon, N. (1976). *British Journal of Preventive and Social Medicine*, **30**, 115-122 **Peptic ulceration in men: epidemiology and medical care.** Estimates of the population prevalence of peptic and duodenal ulceration in men aged between 25 and 64 years were made in the London borough of Lambeth. The sampling frame for these estimates was a 20% private census. The lifetime prevalence rate of proved peptic ulcer (haematemesis, gastric and duodenal ulcers as validated by operation or barium meal), adjusted for age and social class, was estimated to be 6.7%, while the similarly adjusted lifetime prevalence for duodenal ulcer was 4.4%. The lifetime prevalences increased with age but not significantly so. A social class gradient was demonstrated with the highest prevalence in social classes I and II. Previously described associations with blood group, secretor status, and serum pepsinogen were confirmed. Reported use of medical services increased with increasing severity of symptoms. A large number of respondents, however, who reported symptoms reported no medical care. It seemed unlikely that those men who reported symptoms and no medical care had demonstrable peptic ulcers.

Mortality from gastric and duodenal ulcer increased during the first half of the twentieth century (Jennings, 1940; Tidy, 1945; Ivy, Grossman, and Bachrach, 1950). Since the 1950s duodenal ulcer mortality, however, has declined. Crude mortality rates for duodenal ulcer in men during the period 1957-71 have fallen from 88 to 49 per million population. Available measures of morbidity have shown a similar decline; for example, the Hospital In-Patient Enquiry's estimate of discharge rates from hospitals in England and Wales for peptic ulcer shows a decline of from 23.4 per 10 000 in 1957 to 16.2 in 1971. Sickness benefit claims follow a similar pattern: between 1953-54 and 1971-72, there was a decrease in the number of spells of absence and days of absence from ulcers of the stomach and duodenum (Taylor, 1974). Both the morbidity and mortality data therefore suggest that the prevalence of peptic ulcer may have been declining. However, the only method by which this could be demonstrated was to undertake a prevalence survey in the community and compare the results with earlier prevalence studies.

#### OBJECTIVES

In 1964 St Thomas's Hospital accepted responsibility for providing care for the population of the local district. Between 1967 and 1969 four community surveys were carried out; these aimed to help in the planning of future health services by assessing any discrepancies between the need and demand for particular forms of care (Holland and Waller, 1971). The present study was the last to be undertaken and had the following objectives:

1. To determine the prevalence of peptic ulceration in men aged between 25 and 64 years in north Lambeth, and to investigate the relationship between peptic ulcers and certain physiological and social variables.
2. To estimate what proportion of those with peptic ulcer were in contact with medical services, in order to quantify the relationship between need and demand.
3. To compare as sampling frames the St Thomas's Hospital private 20% census of July 1966 with the General Register Office's 10% sample census of April 1966.

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## METHOD

The survey carried out in 1968 in the six northern wards of Lambeth was conducted in two stages. The first, or screening stage, consisted of a self-administered postal questionnaire consisting of questions derived from the work of Dunn (1959). Respondents were classified as having a positive or negative history suggestive of duodenal ulcer, according to the responses to the screening questionnaire. Positive histories were defined as those in which there was mention of a past history of ulcer *or* in which an episode of stomach pain lasting for more than a few days had been reported, and which had been relieved by food or milk, or which had woken the respondent at night. A second stage sample was then selected of some men who responded positively and some men who responded negatively to the screening questionnaire. These men were visited in their homes, where various clinical measurements were made and they were asked more detailed questions. These included their abdominal and respiratory symptoms, past history of ulcer, smoking habits, medical care usage, some personal and social data.\* Anyone reporting treatment in hospital, outpatient attendance for peptic ulcer, or investigations for suspected peptic ulcer had these reports validated against hospital notes. It was originally planned that all those who complained of symptoms highly suggestive of peptic ulcer, but in whom the diagnosis had not been confirmed, would be offered an outpatient appointment for a barium meal examination. In the event, this proved impracticable as the first 23 men with positive responses to all the symptom questions who agreed to have a barium meal examination were shown to have no radiological evidence of ulcer. This procedure therefore was abandoned on ethical grounds.

## SAMPLE

The sample for the survey was drawn for comparative purposes from two sources, the General Register Office 1966 (GRO) 10% sample census and the 1966 St Thomas's Hospital private 20% sample census (Bennett and Kasap, 1970).

The entire GRO 10% census population of 2 187 men between the ages of 25 and 64 years was sent a letter by the Registrar General, inviting participation in the study. Of these only 499 (22.8%) replied and agreed to participate and a further 15 men were subsequently found to have died, moved, or to be older than 64 years so that the final number of people included in the GRO sample was 484, a response rate of 22.1% (Table I). The use of the GRO sample

TABLE I  
SAMPLES AND RESPONSE RATES FOR STAGES I AND II

	Private Census	GRO	Total
Original study population ..	2641 (100)	2187 (100)	4828 (100)
Completed stage I questionnaire ..	2109 (80)	484 (22)	2593 (54)
Positive to screening ..	(23.4)	(26.9)	(24.1)
Stage II sample ..	524 (100)	144 (100)	668 (100)
Completed stage II ..	481 (92)	139 (97)	620 (93)
Positive to screening ..	(63.8)	(66.9)	(64.5)

Percentages are given in parentheses

census as a sampling frame proved to be the least rewarding way of achieving a reasonable response rate. This was because the Registrar General was able to provide only the names and addresses of those who had agreed to participate. It was therefore not possible to get into contact again with any individual who failed to reply.

From the private census, a sample was drawn of 2 641 men stratified by age and social class. Screening questionnaires were posted in October 1968 and second and third mailings to non-respondents took place two and four weeks later.

Table I shows that 2 593 men, 2 109 from the private census and 484 from the GRO sample, responded and completed questionnaires. The proportion positive to screening in the two groups was similar, 23.4% and 26.9%.

Altogether 64% of the men who were classified positive and 11% who were classified negative in the first stage were used as the sample in the second stage. The total thus selected for Stage II was 668, and 620 responded, of whom 400 (64.5%) were initially positive and 220 negative (Table I).

## DEFINITION OF PEPTIC ULCERATION

The definitions used in the prevalence estimates were similar to those used by Doll, Jones, and Buckatzsch (1951) and were based on reported past history of ulcer or any combination of symptoms. The 620 cases were divided into three groups: major, minor, and no dyspepsia.

1. No dyspepsia—individuals with no mention of any complaint relating to abdominal symptoms (namely, stomach pain, heartburn, bloated or full feeling, belching, or nervous stomach).

\*Questionnaires are available from the authors on request

2. Minor dyspepsia—individuals with a stomach complaint not included in the major dyspepsia group.

3. Major dyspepsia—individuals either with a proved history of duodenal ulcer, gastric ulcer, peptic ulcer, or haematemesis (validated from hospital notes), or individuals who had stomach pain classified as a definite ache or pain, which could be relieved by food, milk, or alkali and which awakened the respondent at night, often or occasionally.

Lifetime and six-month period prevalences were calculated using the following definitions:

- (a) Lifetime prevalence—any history of dyspepsia or peptic ulceration;
- (b) Six-month period prevalence—any symptoms of dyspepsia or symptoms from a known ulcer during the previous six months.

Serum pepsinogen estimations were made using the method of Ilic and Spray (1966).

# RESULTS

For the men assigned in the second stage of the study to the categories of major dyspepsia and no dyspepsia, responses corresponded closely to those in the first stage (Table II). Of the 179 men who reported major dyspepsia in Stage II, 174 (97.2%) were positive to screening in Stage I. Of the 111 who reported no dyspepsia in Stage II, 92 (82.9%) reported no dyspeptic symptoms in Stage I. With the minor dyspepsia group the screening questionnaire discriminated less adequately.

We investigated the distribution of responses in the private census sample by age and social class for each question on symptoms in Stage II, since it was possible that different questions might show age or social class trends in opposing directions. No trends were demonstrable.

TABLE II

CORRESPONDENCE BETWEEN STAGE I SCREENING RESULT AND DEGREE OF DYSPEPSIA FOUND AT STAGE II

Stage I Screening Result	Stage II Dyspepsia Status			
	Major	Minor	None	Total
Positive .. ..	174	207	19	400
Negative .. ..	5	123	92	220
Total .. ..	179	330	111	620
% Positive .. ..	(97.2)	(62.7)	(17.1)	(64.5)

# BLOOD GROUP AND SECRETOR STATUS

Previous work had demonstrated an association between peptic ulcer and blood group and secretor status. Table III shows the associations between various levels of dyspepsia and these variables. Of those with major dyspepsia 49% were in blood group 'O', as compared with 39% of those in the no dyspepsia group.

The results of the secretor status investigations also followed the expected pattern, with the major dyspepsia group having a higher proportion of non-secretors (27%) than the minor dyspepsia group (22%) and the no dyspepsia group (19%). Neither the blood group nor the secretor status distribution was significantly different between the three levels of dyspepsia.

# SERUM PEPSINOGEN

The mean levels of serum pepsinogen were a little higher in the major dyspepsia group than in the other two groups—52.9 IU/l in the major dyspepsia group, compared with 50 IU/l in the minor and no dyspepsia groups (Table III). The differences were not statistically significant.

# PREVALENCE RATES

In order to detect any relationship between social class, age, and the categories of dyspepsia quantal

TABLE III

BLOOD GROUP, SECRETOR STATUS, SERUM PEPSINOGEN, AND LEVEL OF DYSPEPSIA (LIFETIME PREVALENCE)

Dyspepsia Status	Blood Group 'O'		Negative Secretor Status		Serum Pepsinogen (mean levels IU/l)	
	No.	%	No.	%	No.	Mean $\pm$ SD
Major .. ..	179	49.2	179	26.8	164	52.9 $\pm$ 20.1
Duodenal ulcer ..	70	50.0	70	25.7	62	49.4 $\pm$ 20.5
Minor .. ..	330	39.7	330	21.5	295	50.1 $\pm$ 22.6
None .. ..	111	38.7	111	18.9	89	49.9 $\pm$ 27.6

$$\chi^2_1 = 4.95 \text{ (NS)}$$

$$\chi^2_1 = 2.90 \text{ (NS)}$$

response regression analyses were undertaken of the responses of the men interviewed in the second stage of the study (Naylor, 1964). This was necessary before estimating population prevalence rates so as to determine whether adjustment for age and social class was required. The social class effect was found to be significant for major and minor dyspepsia at the 5% level, while the age effect was significant for all confirmed ulcers and duodenal ulcers. The observed social class differences in the frequency of reported major dyspepsia followed a linear trend, being highest in social classes I and II and lowest in social class V. The social class trend for minor dyspepsia was also linear but in the opposite direction to that for major dyspepsia. In general, the frequency of ulcers increased with age. Although associations with social class and age were not demonstrated in all categories of dyspepsia, age and social class adjustments were made in all the prevalence estimates.

Prevalence rates and their standard errors were computed with the following factors taken into consideration. First, changes in classification from first stage to second stage due to the sensitivity and specificity of the screening questionnaire in detecting the various categories of dyspepsia identified at the structured interview. Secondly, the disproportionate sampling fractions, 64% of positives and 11% of negatives, that were used in selecting the second stage sample. Finally, the composition of the first stage sample which was a stratified sample with disproportionate sampling fractions in each stratum. For the prevalence estimations, only the private census sample responses were used. There were two reasons for this; first, the GRO sample was not representative of the general population because of the low response rate, and secondly, the social class status of the members of the GRO sample was unknown at the screening stage.

Table IV shows the estimated lifetime prevalence rates for minor and major dyspepsia adjusted for differences in age and social class between the

TABLE IV  
ESTIMATED PREVALENCE RATES (% AND  $\pm$  SE) AGE AND SOCIAL CLASS ADJUSTED, IN MEN AGED 25 TO 64 YEARS

Private Census Estimates				Prevalence
Lifetime prevalence:				
Dyspepsia				
Minor	..	..	..	50.8 $\pm$ 2.2
Major	..	..	..	10.4 $\pm$ 1.2
Ulcer				
Proved	..	..	..	6.7 $\pm$ 1.0
Duodenal	..	..	..	4.4 $\pm$ 0.9
Six-month prevalence				
Dyspepsia				
Minor	..	..	..	35.5 $\pm$ 2.0
Major	..	..	..	2.1 $\pm$ 0.6
Ulcer				
Proved	..	..	..	1.4* $\pm$ 0.5
Duodenal	..	..	..	0.7* $\pm$ 0.4

\*Estimates based on fewer than 15 individuals

sample and the Borough of Lambeth. Half the population reported symptoms of minor dyspepsia, while 10% reported major dyspepsia symptoms at some time during their life. Within this latter group, 6.7% were shown to have proved peptic ulcers; of these, two-thirds were duodenal ulcers. The six-month prevalence rates for major dyspepsia and for peptic and duodenal ulcers were approximately one-fifth the lifetime prevalence rates.

When prevalence rates were considered by age (Table V), little difference was seen between the groups. The lowest lifetime prevalence rate for major dyspepsia and ulcers was in the 35-44 year age group and the highest in the 55-64 year age group.

Age adjusted lifetime prevalence rates by social class are shown in Table VI. Prevalence rates for minor dyspepsia are similar in social classes I-IV and somewhat higher in social class V. In all other categories the prevalence rates in social class V are lower than in the other social class groups.

TABLE V  
ESTIMATED LIFETIME PREVALENCE RATES (% AND  $\pm$  SE) BY AGE (SOCIAL CLASS ADJUSTED)

Dyspepsia/Ulcer Category				Age in Years			
				25-34	35-44	45-54	55-64
Dyspepsia							
Minor	..	..	..	51.6 $\pm$ 5.1	50.6 $\pm$ 4.1	62.1 $\pm$ 4.2	40.2 $\pm$ 4.1
Major	..	..	..	9.1 $\pm$ 2.9	8.1 $\pm$ 2.1	11.5 $\pm$ 2.4	12.8 $\pm$ 2.3
Ulcer							
Proved	..	..	..	4.9 $\pm$ 2.3	4.2 $\pm$ 1.8	6.9 $\pm$ 2.0	10.4 $\pm$ 2.2
Duodenal	..	..	..	3.3 $\pm$ 1.8	2.7 $\pm$ 1.5	4.5 $\pm$ 1.6	6.7 $\pm$ 1.9

TABLE VI  
ESTIMATED LIFETIME PREVALENCE RATES (% AND  $\pm$  SE) BY SOCIAL CLASS (AGE ADJUSTED)

Dyspepsia/Ulcer Category	Social Class				
	I + II	III Non-manual	III Manual	IV	V
Dyspepsia					
Minor .. ..	46.0 $\pm$ 6.8	41.4 $\pm$ 5.6	48.4 $\pm$ 3.7	50.2 $\pm$ 4.6	73.1 $\pm$ 5.1
Major .. ..	15.1 $\pm$ 4.0	12.6 $\pm$ 3.7	9.9 $\pm$ 1.9	11.4 $\pm$ 2.5	4.6 $\pm$ 2.9
Ulcer					
Proved .. ..	8.8 $\pm$ 3.5	8.9 $\pm$ 3.5	6.2 $\pm$ 1.6	7.2 $\pm$ 1.8	3.8 $\pm$ 2.8
Duodenal .. ..	7.8 $\pm$ 3.4	7.2 $\pm$ 3.4	3.7 $\pm$ 1.3	4.0 $\pm$ 1.4	1.4 $\pm$ 1.3

# RATIO OF THE PREVALENCE OF GASTRIC TO DUODENAL ULCERS

In the present study those men who reported past histories of dyspepsia or peptic ulceration (104) and hospital attendance had these attendances validated against hospital notes. This information was used to calculate the ratio of gastric to duodenal ulcers. Duodenal ulcers were classified as such only if a definite diagnosis had been made; 70 such cases were identified. 'Gastric ulcers' have been taken to include both previously diagnosed gastric ulcers (12), peptic ulcers (12) (as defined on radiological reports but for which films were not available), and haematemeses (10) in which no underlying disease could be demonstrated. The ratio of the combined gastric and unspecified peptic ulcers to duodenal ulcers (age and social class adjusted) in this study was 1 : 1.9.

## USE OF HEALTH SERVICES

In the second stage of the study, all the men who were interviewed were asked what use they had

made of drugs and medical services during the previous six months. Reported use of the health service was compared with reports of dyspepsia during the same period of time.

Of the 620 men in the second stage of the study, 18.4% reported using medication or being in contact with their general practitioner or a hospital during the previous six months (Table VII). Medication or contact with medical services increased with the severity of the reported symptoms.

Of the 13 men who were known to have ulcers and to have suffered recent dyspepsia, more than half (eight) reported taking no medication in the last six months. Of the 23 men with major dyspepsia, a similar proportion reported no medication. However, 14 of these individuals had made previous contact with the medical services (seven had negative barium meals, four claimed to have had barium meals although no hospital records could be traced, and three had undergone surgery for peptic ulcer). Of the remaining nine men with major

TABLE VII  
MEDICAL CARE FOR ULCER OR GASTRITIS BY VARYING LEVELS OF DYSPEPSIA DURING A SIX-MONTH PERIOD

Medical Care During Previous Six Months	Dyspepsia During Previous Six Months				
	None	Minor	Major	Proved Ulcers (without surgery)	Total
None .. ..	274 (95.8)	210 (70.5)	14 (60.9)	8 (61.5)	506 (81.6)
Medication only (self and GP prescribed) ..	7 (2.5)	38 (12.8)	3 (13.0)	2 (15.4)	50 (8.1)
GP contact (with or without medication) ..	3 (1.0)	27 (9.1)	5 (21.7)	1 (7.7)	36 (5.8)
Hospital (in- or outpatient, with or without GP contact, and/or medication) .. ..	2 (0.7)	23 (7.7)	1 (4.4)	2 (15.4)	28 (4.5)
Total .. ..	286 (100.0)	298 (100.0)	23 (100.0)	13 (100.0)	620 (100.0)

dyspepsia who had never been investigated, two failed to attend for barium meal examination as part of the study, in three cases the general practitioner could not be traced, and in two cases the general practitioner said there was not enough evidence to justify a barium meal. Finally, for two men the general practitioner agreed that the patients should have a barium meal but the programme of examinations was cancelled (because of 23 consecutive negative examinations) before these patients could be contacted. Overall five of the 23 men (23%) with major dyspepsia had never received, or had not been given the opportunity to receive, basic diagnostic medical care. This could be seen as a minimal estimate of medical need that was not being met. A maximal estimate of unmet medical need could be regarded as the 22 men out of 36 (66%) who reported major symptoms and yet reported no medical care within the six months.

#### DISCUSSION

Several difficulties are encountered in any prevalence study of peptic ulceration. First the barium meal examination, the definitive test, may fail to outline the ulcer (Hodgkin *et al.*, 1970) and give false negative results in individuals with high symptom scores. Secondly, the use of a questionnaire as an indirect measure of ulceration has the limitation of a low sensitivity. Dunn (1959), for example, in developing a screening technique tested many common symptom combinations occurring in duodenal ulceration but was able to achieve only a maximum sensitivity of 0.62 and a specificity of 0.94–0.97 for the most discriminating group of symptoms. Epstein (1969) achieved a higher sensitivity (0.85) using the same questions, but the study was undertaken on a highly selected group of patients referred for a barium meal examination. In this study, nearly all the men (97.2%) who reported major dyspepsia in the second stage of the study were classified as positive to screening in the

first stage, while most of those (82.9%) who reported no dyspepsia at interview had been screened in the first stage as negative. However, in 23 men who were positive to screening, with high symptom scores, no new ulcers were detected on barium meal examination. The final difficulty is that past histories of peptic ulceration are often difficult to validate as hospital records may be lost, or for research purposes may be incomplete or ambiguous. Each of these factors acts in the same direction and tends to result in an underestimation of the true prevalence of peptic ulcer.

The association between grades of dyspepsia, duodenal ulcer, and blood group was similar to that reported by Aird *et al.* (1954). Similarly it had been shown (Clarke *et al.*, 1956; Doll, Drane, and Newell, 1961; Hanley, 1964) that ABH non-secretors had a greater liability to ulceration than secretors. Our results agree with these findings.

The overall lifetime prevalence for peptic ulcer in men aged between 25 and 64 years in the London Borough of Lambeth was found to be 6.7%. Comparative prevalence rates for some of the other studies published between 1947 and 1964 are given in Table VIII. Such comparisons are difficult to make because of the differences in the health status of the groups studied and the criteria used for defining ulcers. In several of these studies, selected populations have been surveyed either in terms of occupation (Doll *et al.*, 1951) or of particular circumstances such as the study by Knutsen and Selvaag (1947) which was carried out in Norway during the occupation in 1942. Despite these problems, it is perhaps useful to compare studies carried out between 1947 and the present time to see if it is possible to detect any gross changes in prevalences. As can be seen from Table VIII, there is little evidence of any large change in overall prevalence rates between these various studies.

Lifetime prevalence figures by age for minor dyspepsia were lowest in the oldest age group. This may be explained by errors in recall or because such

TABLE VIII  
STUDIES OF PEPTIC ULCER PREVALENCE IN MEN

Year	Study	Population	Age Group (Years)	Prevalence (%)
1947	Knutsen and Selvaag .. ..	Ration applicants (Drammen, Norway)	20–59	4.2
1951	Doll <i>et al.</i> .. ..	Selected occupational groups (England)	25+	5.2
1964	Fry .. ..	GP list (Beckenham, Kent)	All ages	6.6
1968	Weir and Backett .. ..	GP lists (NE Scotland)	15+	10.2
	Present study .. ..	Random sample of private census (Lambeth)	25–64	6.7

minimal symptomatology was accepted as 'normal' by an older age group. The somewhat higher prevalence of confirmed ulcers and duodenal ulcers in the older age groups is similar to the findings of Doll *et al.* (1951). Lifetime prevalence figures by social class show higher proportions of major dyspepsia and proved ulcer in the higher social classes. Doll *et al.* (1951) reported no such differences although in their study men with duodenal ulcer in social classes I, II, and III did have a somewhat higher standardized morbidity ratio than men in social classes IV and V. There are a number of possible explanations for this study showing a different trend. First, it was undertaken almost 20 years after the study by Doll *et al.* (1951) and the occupational classification they used was developed in 1934. Secondly, the population in this study was different, being based on a random sample of a metropolitan borough, whereas Doll *et al.* (1951) used selected occupational groups. Thirdly, it is possible there may be an earlier and higher detection rate for duodenal ulcer for men in social classes I, II, and III in Lambeth, since men in these social classes tend to use medical services more often than those in the lower social classes (Palmer *et al.*, 1969). Finally, these figures may indicate a real change in the pattern of duodenal ulcer prevalence between the social classes.

Assessing the use of medical services reported by the respondent is difficult because there are no standards available to indicate the appropriate use of such services. In the present study, only approximately 30% of those who have had some gastrointestinal complaint reported taking some action during the six months. This finding may be typical because Kosa, Alpert, and Haggerty (1967) had also noted that people grossly underestimated their morbid conditions when compared with the findings of medical examinations. Although Wadsworth, Butterfield, and Blaney (1971) found that where symptoms caused by peptic ulcer were reported, 71% of these respondents used some medication (five out of seven individuals), in this study only 39% of those with major dyspepsia and confirmed ulcers reported receiving or taking medical treatment (14 out of 36 individuals).

The medical care findings indicated that although most individuals with symptoms sought no care at all, the tendency to consult increased with the severity of symptoms. It is important to note, however, that none of the men with high symptom scores investigated by barium meal was found to have a peptic ulcer, which would indicate that at the more severe levels of disease those in need of services had already received them. It is possible that the medical profession are not able to recognize many

patients with peptic ulcers until perforation, haematemesis, or other clinically specific events occur. Hodgkin *et al.* (1970), from their experience of dyspeptic complaints in general practice, suggested that the 'main difficulty in estimating aetiology and prevalence is that a barium meal may fail to outline an existing ulcer'. They quoted other sources which estimated that as many as 33% of ulcers might be missed by radiology.

The results of the use of health services also showed a discrepancy between complaints reported and medical care received in that 12 men reported no symptoms but did report medical care (Table VII). In order to interpret this finding, it is necessary to consider the design of the questionnaire. To collect the information on gastrointestinal complaints, respondents were asked whether they had had 'stomach pain, bloated feeling, belching, heartburn, or nervous stomach' during the last six months. Later in the questionnaire they were asked if they had used any form of medical care and for what reason. The reasons for consultation were then classified according to whether these complaints were related to 'ulcer' or 'gastritis.' The question which asked for the reason for consultation was open-ended, and in many cases the responses were the individuals' own diagnoses. Consequently a comparison between these reports and those based on positive or negative responses to a specific symptom list might be expected to produce some discrepancies. When the 12 men who reported contacting medical services but reported no symptoms were investigated further, they were found to have sought care for complaints such as persistent flatulence and non-specific stomach upsets.

In general the medical care study showed that consultations and medication increased as the reported symptoms increased. There were however, many respondents who reported symptoms but no medical care. However, in view of the series of negative barium meals on men with high symptom levels, it seems that those who reported symptoms but no medical care were unlikely to suffer serious disease that was amenable to treatment.

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